THE RELATION OF PSYCHOLOGY TO PHILOSOPHY

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OF

EXPERIMENTAL PSYCHOLOGY

TO

PHILOSOPHY.

LECTURE DELIVERED BEFORE THE ROYAL BELGIAN ACADEMY

BY

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TRANSLATED FROM THE FRENCH BY

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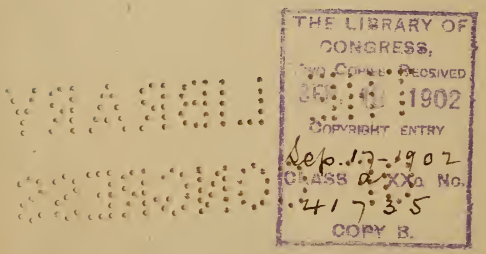

TRANSLATOR'S PREFACE.

EXPERIMENTAL PSYCHOLOGY, the youngest of the natural sciences, is a product of our own days. In a few years it has grown to such an extent as to leave no doubt that it has come to stay, and is not merely a fad of the passing hour that can be ridiculed out of existence. This remarkable growth is especially apparent in our own country. Since the establishment of the first psychological laboratory by Stanley Hall at the Johns Hopkins University in 1881 these laboratories have multiplied so rapidly that there is now no university or academy of higher studies in the country that does

not boast of a psychological laboratory, and consequently we number more such laboratories in America than there are in the rest of the world put together. In view of this fact the question presents itself to Catholic philosophers, and for that matter to all students of philosophy, *What are we to think of this new science?* Is it necessarily materialistic in its methods and tendencies? Can it be brought into harmony with a spiritualistic philosophy? This question is imperative; it can no longer be ignored. To furnish the student of philosophy with an answer to this pressing question was the purpose of the author of the discourse before us. The position taken needs no defence. The words of the author are clear, and contain their own justification.

As the author is known in America

only through his French works, it may not be amiss to say a few words concerning him and his method in philosophy. Soon after our Holy Father Leo XIII. had exhorted the Catholic world by his memorable encyclical "*Œterni Patris*" of August 4, 1879, to return to the sound principles of St. Thomas in philosophy, he turned his eyes to the old university of Louvain and desired that a chair of Thomistic philosophy be erected there.* This chair was accordingly founded and entrusted to Mgr. Desiré Mercier, and classes were opened in October, 1882. The success with which Mgr. Mercier expounded the doctrine of St. Thomas induced the Holy Father to enlarge his scheme. He asked the bishops

* Letter of Pope Leo XIII. to Cardinal Dechamps, Dec. 25, 1880.

of Belgium to erect an institute after the model of the Roman schools for the more thorough teaching of Thomistic philosophy.* The bishops carrying out the wish of His Holiness founded such an institute and placed it in charge of Mgr. Mercier. At the same time they founded the Séminaire Léon XIII., where the ecclesiastical students that follow the course of the institute might receive an ecclesiastical training under the guidance of Mgr. Mercier. It was now that the ardent lover of philosophy saw himself enabled to carry out a work which had been the subject of his thoughts and meditations for years. He recognized the great harm done by a false philosophy, and believed firmly that the cure was to be

* Letter of Pope Leo XIII. to Cardinal Goossens, July 15, 1888.

sought in a return to St. Thomas, the great doctor of the Middle Age. He saw too that the return which was being made had for some reason or other very little influence upon the world; men not belonging to the school treated it as non-existing. The principal reason for this he recognized to be the prejudice that every Catholic philosopher was in every case nothing but an apologist for his Credo. To remedy this he decided that it was necessary to create a Thomism that would be more than a mere "ancilla S. Theologiæ"; a philosophy for philosophy's sake; one that could go out and meet philosophers on their own ground; one that was able to live in the atmosphere of our age, and did not need to be galvanized into life continually by authority. This was his first thesis.

Just as philosophy without being indifferent to theology was to be studied for its own sake, so also science. The atmosphere of our age is preëminently a scientific one, and we must either accept the conditions of life or refuse to live. Speculation can have no value if not based on facts, and these are furnished by scientific investigation. The data of science, then, cannot be neglected in philosophy, if it proposes to live and influence the world. His second thesis, therefore, was to study the sciences and to harmonize their results with the principles of sound philosophy.

How well Mgr. Mercier has carried out his programme will be apparent to any one who will take the trouble to acquaint himself with the work of the institute. He will find there a complete course of the sciences, with laboratories

and apparatus such as no other Catholic college can show in connection with a philosophical course.* He will find that no question of philosophy is treated without an ample explanation of its relation to questions of science. The results of scientific research are used continually to furnish a basis for speculation and to confirm the conclusions of reason. It is principally on this account that Mgr. Mercier has been one of the few Catholic philosophers that have been able to break the conspiracy of silence on the part of non-Catholic philosophers against Thomism. We need only allude to the

* M. Binet in the *Année Psychologique* says: "For the course of M. Thiéry (professor of Experimental Psychology at the Institute) there is a laboratory and complete equipment for physiological psychology such as does not exist at present in all France." Since this was written in 1896 one has been founded at the Sorbonne after the model of that at Louvain.

articles on Neo-Thomism that have appeared in the *Revue Philosophique*, the *Année Psychologique*, the *Kantstudien*, the *Zeitschrift für Psychologie und Physiologie* der Sinnesorgane, the *Revista Critica* of Morselli, the *Revista Filosofica*.

As additional evidence of this we may also mention the invitation which has been extended to him by the British Government to appear before the "Royal Commission on University Education in Ireland" to offer suggestions relative to the philosophical course in the proposed University of Ireland.

This then is the purpose Mgr. Mercier has set to himself in his life's work, and this some of the success already attained. May the good work prosper.

EDMUND J. WIRTH.

THE RELATION OF EXPERIMENTAL PSYCHOLOGY TO PHILOSOPHY.

Ladies and Gentlemen:

The subject of the lecture which I have the honor to deliver before you is "The Relation of Experimental Psychology to Philosophy."

If a philosopher had pronounced the word Experimental Psychology in 1820 or 1850, he would have astonished, not to say scandalized, every one. "What," they would have exclaimed, "experiment on the soul! Is not the soul by its very definition invisible and inaccessible to our senses, and hence to experiment?

Do not the operations of the soul emanate from a principle that is spiritual in its nature, and therefore independent? Are not its acts for this reason above material laws and measurements? But if this be the case, how can there be an experimental science of the soul; since without laws it would not be a science, and without processes of measurement not experimental?"

The spiritualistic philosophers of the first half of the nineteenth century—Cousin, Jouffroy, Garnier—in conformity with Des Cartes, taught that the soul had but one means of knowing itself, and that this was to contemplate itself by means of the eye of inner consciousness. The task of the psychologist according to them was limited to the analyzing, describing, and arranging of one's inner acts in distinct categories

under the various faculties that elicited these acts. This comprised all the psychologist was supposed to do.

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Inner consciousness, made by these philosophers the sole means of the soul's information, seems at first sight a very unsafe one. Has it not been abused continually? Does not the very fact that you submit a mental state to the scrutiny of consciousness modify more or less profoundly the nature of the state which is to be examined; so that consciousness itself will falsify the results of its analysis? Auguste Comte has gone so far as to declare interior observation physically impossible. "It is obvious," he writes, "that by an invincible necessity the human spirit can observe directly all phenomena except its own. We understand that a man

can observe himself as a moral agent, because in that case he can watch himself under the action of the passions which animate him, precisely because the organs that are the seat of these passions are distinct from those that are destined for the functions of observation. . . . But there is a manifest impossibility to observe the intellectual phenomena whilst they are being produced. The individual thinking cannot divide himself in two, so that one-half should think and the other watch the process. Since the organ observing and the one to be observed are identical, there can be no self-observation. This so-called psychological method, therefore, is radically wrong in principle."*

Des Cartes had divided the objects of human knowledge into two vast classes:

* Cours de philosophie positive, 1ière leçon.

the one comprising matter, extended, divisible, subject to mechanical laws, and consequently knowable by external observation; the other, simple beings, spiritual, endowed with thought, and knowable by internal observation only. This division of human knowledge was accepted more or less formally by the majority of thinkers down to the middle of the nineteenth century.

Under the influence of Gilbert (1540–1603), Galileo (1564–1642), Pascal (1623–1662), Huyghens (1629–1695), Newton (1642–1727), Fresnel (1788–1827), Ampère (1775–1836), Faraday (1791–1867), and many other illustrious men the natural sciences had made marvellous progress. This was principally due to the development of the experimental method, at the same time inductive

and mathematical. In 1842 Mayer discovered the mechanical equivalent of heat. It was found that a law of correlation ruled the forces of nature. No force is produced without the loss of another; none disappears without giving place to another. The idea of considering all natural forces merely as different forms of mechanical energy and of applying to them the law of the conservation of energy thus gradually prevailed.

Kepler had long before prepared the mechanical theory of the heavens; Newton wrote the first chapter; Lagrange, Laplace, LeVerrier continued the work. Chemistry began to be considered as made up of a relation of weights. The efforts of a great many chemists were directed towards tracing chemistry and mechanics to a common parentage. The discovery of the Abbé

Hauy gave Crystallography geometrical laws and promised to reform the science of Mineralogy.

On the other hand, the relations of human Physiology to Chemistry and Physics became closer from day to day, so that the attempt made by Des Cartes in his *Traité de l'homme* to give a mechanical explanation of the functions of organisms seemed no longer impossible. At the same time Darwin pushed the biological sciences into new methods. Henceforth organisms were no longer to be merely observed under the microscope, described according to their specific type, arranged in their order, class, and family; the laws of their origin was to be the important question. Schwann's discoveries created the sciences of cellular biology and histology. Embryology was being studied

and gave hopes of results. In a word, all the natural sciences had received a new impetus.

Everywhere, then, scientific discoveries, and at times even superficial hypotheses which seemed to be favored by discoveries, tended to develop the experimental method in the study of the natural sciences. They made men simplify by analysis, give precision to their results by measurements, generalize by calculation. The relation between organic kingdoms was substituted for simple description. The question arose naturally enough whether in this new movement psychology alone was to remain stationary or whether it, too, was to adopt the new method.

This was a critical moment for psychology. If it remained refractory to the general conditions of progress,

would it not virtually abdicate its claims of being a science? On the other hand, could it in any way attach itself to physics and mechanics and submit, by any title whatever or in any degree, to the experimental method without becoming materialistic? This dilemma has only too often been considered complete in circles not acquainted with the work of Experimental Psychology and the history of philosophy. We believe that this is not the case. Neither the work nor the method of Experimental Psychology are opposed to the principles of spiritualistic philosophy. We believe that they are not only in harmony with each other, but that philosophy will even receive valuable assistance from the new science.

I.

In the first transports of joy at the birth of the new science those that had taken it upon themselves to popularize it misrepresented its purpose and importance. They took delight in styling it the New Psychology, in order to oppose it to the old or metaphysical psychology. The latter, they claimed, had exhausted itself in foolish discussions on the soul and its faculties, and that the time had come to create a psychology that would be scientific.

These sentiments were expressed especially by M. Ribot in his two well-known works, *La psychologie anglaise contemporaine* and *La psychologie allemande contemporaine.* The consequence of this was that works on Experimental Psychology were often re-

ceived by some with satisfaction and by others with mistrust, for no other reason than that it was considered incompatible with spiritualistic philosophy.

The object of Experimental Psychology is mental states, their relation to one another, and the laws of their development.*

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* The research of Experimental Psychology has today taken considerable proportions. Since Wundt founded his first laboratory of Psychophysics in 1878, a number of learned men, trained for the most part in his school, have established similar centres of study in Germany, Denmark, Italy, Switzerland, Belgium, France, Russia, Japan, and particularly in the United States. It is in the United States that the greatest interest in the new science is taken. Wundt, Ziehen, Kuelpe, Ebbinghaus in Germany, Hoeffding in Copenhagen, Sergi in Italy, Sully in England, Ladd, James, Baldwin, Dewey, Titchener, and Scripture in America, have published the results of psychophysical experiments. Several reviews and a number of special works have been published and are still publishing, notably *Philosophische Studien* (Leipzig), *Beitraege zur experimentellen Psychologie* (Freiburg i. B.), *Zeitschrift für Psychologie und Physiologie der Sinnesorgane* (Leip.

Since, then, psychology treats of mental states in themselves, it must describe their quality, quantity, tonality, and dynamogeny.

The study of the quantity of mental states places them immediately in relation to the physical activities that precede and accompany the sensation. It is here that materialistic prejudices find their principal field. Materialists have

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zig), *The Psychological Review* (New York), *L'Année psychologique* (Paris). Finally four congresses have been held, the fourth taking place at Paris in 1900.

The purpose of these researches is vast, and we cannot undertake to point out their numerous applications. However, in a general way we may say that it is twofold : first, the description of conscious states, simple or complex, in the order of cognition or emotion ; secondly, the conditions and the laws of their combination and dissociation. The interpretation given to the results of the first order will determine that of the second. If the first class does not favor the materialistic hypothesis, then the second, which is founded on the first, can never support it.

tried to turn the result of the experiments made by Weber on the quantity of sensation, as interpreted and erected into a law by Fechner, against spiritualistic philosophy. In like manner they treated the known fact that psychic acts take time. Let us examine these facts a little more closely.

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The general result of Weber's experiments was to confirm the fact ordinarily perceived, that to every difference in the intensity of two given excitants or stimuli producing a sensation there does not always correspond a similar difference in the sensation itself. To this fact of every-day observation Weber gave scientific precision. He found that the quantity that must be added to an excitant in order to cause a perceptible difference in the sensation

is not an *absolute* one, but a *relative* one. Thus if the initial weight causing a sensation of pressure be 1, we must add $\frac{1}{3}$ to make the difference perceptible; if it be 2, we must add $\frac{1}{3}$ of 2, or $\frac{2}{3}$; if it be 3, we must add $\frac{1}{3}$ of 3, or 1, to cause a perceptible difference in the sensation of pressure. Hence the formula of Weber's law: *The increase of the excitant necessary to produce a perceptible modification of the sensibility is in a constant relation to the quantity of the excitant to which it is added.* Although the law of Weber, as psychologists themselves confess, has obtained only an approximate confirmation, we are still inclined to look upon it with confidence. As the methods of measurement are being perfected and the instruments are becoming more precise, and hence the internal and exter-

nal causes of error are being more and more eliminated, the deviations from the law diminish; so that we may now regard the exceptions as proving the rule. Fechner and others after him have expressed the law in a mathematical formula. Considering the smallest perceptible difference as equal to 1, the ordered series expressing the intensity of the sensations will be 1, 2, 3, 4, 5. . . . They therefore form an *arithmetical progression*, since the numbers differ, each from the preceding one, by the same quantity, i.e., by 1. On the other hand, the additional excitants capable of producing such a series of sensations form among themselves, according to the experiments of Weber, a *geometrical progression.* Hence the formula of Fechner: *That a sensation may increase in arithmetical progression the*

corresponding excitant must increase in geometrical progression.

This mathematical interpretation of Weber's law seems defective. It would make us believe that the psychologist compares the gradual increase in the intensity of the sensation to a continuous quantity, divisible into equal parts commensurate with one another. To have an arithmetical progression all the terms of the series must increase by the *same* quantity, which is called the ratio of the progression. To arrange the minimal differences in arithmetical progression supposes that we know them to be *equal.* The mathematical formula of Fechner implies therefore that we perceive an *equal minimal difference* between visual and auditive sensations.

That this is impossible is clear. In

fact the experiments of Weber have no such results to show. The experimenter asks the subject whether he has perceived a sensation differing from the one perceived before, but he does not and could not ask seriously *how much* it differed from the first. To be able to answer such a question the subject would have to have the consciousness that the first sensation *A* increased until it became the second sensation *B*. In that case he would perceive *the same sensation A increasing*, and not first the sensation *A* and afterwards the sensation *B* distinct from the sensation *A*. In this way we would no longer compare a series of sensations with one another, but a sensation with itself, and thus the object of the law itself would disappear.

Weber's experiments warrant only

one conclusion, namely: *The series of mental states perceived by consciousness is subordinate to physical excitants, which stand in a constant and definite relation to one another.* Interpreted in this manner his experiments show nothing that is not in perfect harmony with the most rigorous spiritualism. Sensation is an act of the nervous organ; it is therefore bound in its functions to the chemical and physical conditions of nervous activity. "The acts of sensitive life," says St. Thomas—and this conclusion of the great doctor is confirmed by the youngest science—"the acts of sensitive life do not belong to the soul alone nor to the body alone, but their subject is the combination of both."

Sensations from their qualitative as well as from their quantitative point of

view, their association, the emotions that result in consequence of them, all are so many mental states whose substratum is the nervous substance. If it is true that there are in man acts that do not result from nervous functions and are not reducible to them, it is equally true that there are none that are not preceded and accompanied by functions of nerve-centres. So far as the applications of Weber's law are verified, there is not and can never be an opposition between it and the spiritual philosophy of St. Thomas.

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The same answer may be given to the objection which Schiff of Florence and Herzen of Lausanne have drawn from the *duration* of psychic acts. A superficial observation would lead us to believe that the sensation of a flash of

lightning, of the pricking of the hand or foot, is perceived instantaneously. Still psychologists measure in hundredths of a second the exact time it takes from the moment the light strikes the retina until the sensation is perceived; the time it takes from the irritation of the nerve-end until the pain is felt; the time required to judge between the excitation of the foot and the excitation of the hand.

"Since all processes," says Herzen,* "that take time are motion, psychical activity is nothing but a form of motion." Again, "Since the production of a psychical act takes time that is relatively very long and apparently inert between the cause at the point of departure and the realization of the act itself, we must conclude that the act

* *Le cerveau et l'activité cerebrale,* pp. 86, 94.

takes place in a substratum which is extended, resisting, and complex, just as other phenomena of nature do. Further, as every interval is employed in transmitting and eventually in modifying the external impulse in the internal substratum, and since all transmission and modification is finally reduced to some form of motion, it follows that *every psychical act consists in a transmission and modification of some external impulse, i.e., in some particular form of motion.* Such is the generalization or inductive conclusion which the numerous well-established facts relating to the duration of psychic acts warrant us to draw."

The objection is always based on the same equivocation. Psychical acts, such as having a sensation, noticing it, localizing it, distinguishing it from others,

are not operations of an immaterial soul, but of a living body. They imply functions of the nervous substance. These functions bring with them changes of various kinds, molecular motion, variations of temperature, chemical combinations, and decompositions. These phenomena succeed one another, and this succession takes time. There is nothing in all this that cannot be brought into harmony with the most orthodox spiritualism.

To assert with Schiff and Herzen that these processes are nothing but motion is, to say the least, inexact. Such a proposition is unintelligible. If you assert that acts of seeing, hearing, judging, willing, enjoying, are accompanied by motion the meaning is clear; but if you affirm that such acts are motion the proposition becomes utterly unintelli-

gible. Sensation, differentiation of psychical acts, emotion, have no sense if they are only *physical* and not also *psychical acts*, modifications of my inner consciousness, subordinate if you will to external excitants, but not identical with them.

An American psychophysicist, professor at Yale, openly takes the side of men like Lewes, Comte, Maudsley, and even Spencer, and pretends to express conscious states in terms of physics and physiology, identifying a physical excitation or a nervous shock with an act of consciousness, confounding physiology with psychology, and subordinating the latter to the former. "There can be nothing more absurd than that sort of language in the mouth of a psychologist," says Ladd,* "for the foun-

* Ladd, *Outlines of Descriptive Psychology*, p. 60.

dation of all psychology is consciousness. The physical conditions of conscious life are the constant object of research. The moment the psychologist studies psychical states scientifically he does not know or care to know that there is such a thing as nervous substance or cerebral hemispheres." We might adopt the figurative language of Taine or of Fouillée and say that the conscious phenomena are the within and the nervous functions the without of the same act; but it is evident that it is not indifferent for a phenomenon to have only a without as the falling of a stone, or to have also a within for the introspection of consciousness.

We have thus far examined the relation between elementary mental states and their physical antecedents. This

may be summed up in the statement of the law of Weber. We have indicated the results of measurements applied to the duration of psychic acts in themselves. In all these experiments there is nothing that contradicts true philosophy.

Psychical activity may further be considered in its relation to the effect produced on the muscles, the circulation of the blood, the temperature of the organism. These effects are measured by the dynamometer, the sphygmograph, the plethysmograph, and the thermometer. It is easy to show that from this point of view the data of consciousness and of experiment are in perfect harmony. There is not a single thought, were it even the conception of the law of universal gravitation, that is not accompanied by a cerebral image. This image is produced

by some sensitive nerve-centre, and consequently has some influence on motor-centers and on the muscles. Hence it varies the dilatation of the arteries, the volume of the bodily members, and in general the physical condition of the whole organism.

Mental states are considered in the three relations of which we have spoken. What we have seen certainly does not justify the mistrust of spiritualistic philosophers, and their suspicions must be reduced to misinformation ; no more does it justify the pretensions of materialistic popularizers of psychology. We shall, however, not be content with a negative defence. We assert that *Experimental Psychology widens the road of progress for true philosophy and furnishes it with valuable information.*

II.

The first merit of Experimental Psychology is to have turned empirical psychology into a *natural science*, and to have multiplied, and treated with greater precision, the materials which will prepare a more comprehensive synthesis at some future time. Professional psychologists have the laudable ambition of creating a new science, and are not—or at least are no longer—thinking of substituting it for metaphysics. "Let us well understand this important point," writes Binet.* "Experimental Psychology is independent of metaphysics, but it does not exclude metaphysics." Hoeffding † and others that

* Binet, *Introduction a la psychologie*, p. 146.

† Hoeffding, *Outlines of Psychology*, p. 14. London, MacMillan; 1891.

might be mentioned hold the same view.

Like cellular biology, embryology, anatomy, cerebral physiology, and a host of other sciences which bygone centuries did not know and whose brilliant future they could not foresee—like these, and more than these, Experimental Psychology helps to give a scientific basis to the philosophy of man. By means of physical and physiological excitants it calls forth determined states of consciousness systematically; simplifies them; observes their genesis; compares them from different points of view as regards their quality, intensity, duration, tonality, dynamogeny; it studies how they manifest themselves; how they externalize themselves. How can any one be blind to the advantages this gives us in the study of mental

facts. It gives us a *new orientation*, and favors as a necessary consequence the development of our metaphysical knowledge of the Ego.

Secondly, Experimental Psychology has already contributed much to give precision to spiritualistic doctrine as regards the sciences, and will no doubt dispel many more doubts and equivocations.

The scientific proof that there exist definite and regular relations of interdependence between our mental states and their excitant causes, between them and their effects, will do much to drive from the field of philosophy the subjective spiritualism of Des Cartes and Cousin. At the same time the prejudice that spiritualistic philosophy and the sciences are hostile to each other, that materialistic positivism is the sole

authorized representative of positive science will have to fall.

Men of science too much accustomed to look only at the external, physical, or physiological aspect of man's activity have learned in the school of Experimental Psychology to turn their minds also to the internal psychical life. Those that for a long time accepted on faith the identification of conscious states with modes of motion now see that they have only been juggling with words.

Psychologists to-day are agreed that internal observation must predominate and that external means, far from replacing it, can only aid it. What, after all, is a fact of nature if the mind has not seized, examined, and assimilated it? True, the information of consciousness is often precarious. For this rea-

son we do well to aid and control it by scientific apparatus. These apparatus can only aid, never supplant, introspection. The telescope does not replace the eye, but extends its vision. Likewise man whose study is man is aided in this by apparatus that increase his perceptive faculties tenfold.

We see, then, that the hope of substituting experiment for self-observation on the plea that it falsified the results is vain. We remember the statement of Comte that internal observation of mental acts is impossible. When Zeno by subtle argument denied the possibility of motion he was refuted by the simple process of walking. Just so we answer Comte that we know nothing that is not in some way within us. A thing to be known must in some way become present to our minds, as the

schoolmen said, "The object known is in the subject knowing." Comte said: "We understand that a man can observe his passions for this anatomical reason, that the organs which are their seat are distinct from the organs of observation; but when we speak of intellectual phenomena, the organ observing and the organ observed are identical. How can there be any observation in this case?"

In answer we might ask a few questions: Can the passions be observed without becoming the object of our cognition? Is the organ of the inner sense the same as those of the external sense? Do not all organs finally belong to the same subject? Is that subject necessarily material? Can the French positivist not see that he is begging the question, since the point in

question is precisely the nature of the intellectual phenomena? Say what he will, the court of last appeal is and remains consciousness.

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In addition to the general influence of orientation in psychology, the investigations of Experimental Psychology have, by reason of the exact methods used, given philosophy some confirmations worthy of note. The first of these is the distinction between sense and intellect; the other bears on English Associationism.

It is commonly observed that after a strong sensation our senses remain for a time incapable of perceiving weaker ones. After a strong odor we do not smell a light perfume; after a strong detonation our ears are for a time deaf to sound; a flash of lightning blinds us

so that we do not perceive the luminous surface of objects round about us. This accounts for the expressions of a deafening sound, a blinding light, a deadening pain. By these expressions we simply mean that the sensation has been so strong as to leave our sensibility inactive.

This wearing out of the organs by use has not escaped the penetrating minds of Aristotle * and his commentator St.

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* Ὅτι δ' ουχ ὁμοία ἡ ἀπάθεια τοῦ αἰσθητικοῦ καὶ τοῦ νοητικοῦ φανερὸν ἐπὶ τῶν αἰσθητηρίων καὶ τῆς αἰσθήσεως· ἡ μέν γὰρ αἴσθησις οὐ δύναται αἰσθάνεσθαι ἐκ τοῦ σφόδρα αἰσθητοῦ, οἷον ψόφου ἐκ τῶν μεγάλων ψόφων, οὐδ ἐκ τῶν ἰσχυρῶν χρομάτων καὶ ὀσμῶν οὐθ ὁρᾶν, οὔτ ὀσμᾶσθαι· αλλ' ὁ νοῦς ὅταν τι νοήσῃ σφόδρα νοητὸν, ουχ ἧττον νοεῖ τὰ ὑποδεέστερα, ἀλλὰ καὶ μᾶλλον· τὸ μὲν γὰρ αἰσθητικὸν οὐκ ἄνευ σώματος, ὁ δὲ χωριστός.

(The study of sensation and the organs of sense testifies that the sentient and intelligent subjects are not in the same conditions of inalterability. A vehement sensible excitation impedes the sensation; violent noises disturb the hearing; strong colors and odors hinder sight and smell. On the contrary,

Thomas.* To this may be added another observation not less characteristic.

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when the intelligence perceives an excellent object it becomes not less apt, but rather better disposed, to understand inferior ones. The explanation of this is that the former is organic and the latter is not.) Aristotle, *De Anima*, L. III., ch. iv., p. 5. Ed. Didot.

* Sensus . . . patitur per accidens in quantum organi proportio corrumpitur ab excellenti sensibili. Sed de intellectu hoc accidere non potest, cum organo careat; unde nec per se nec per accidens corrumpi possibile est. Et hoc est quod dicit, quod dissimilitudo passibilitatis sentivi et intellectivi manifesta est ex organo et sensu, quia sensus efficitur impotens ad sentiendum ex valde sensibili, sicut auditus non potest audire sonum propter hoc quod motus est ex magnis sonis, necque visus potest videre, necque olfactus odorare ex eo quod hi sensus moti sunt prius ex fortibus odoribus et coloribus corrumpentibus organum. Sed intellectus, quia non habet organum corporeum, quod corrumpi possit ob excellentiam objecti, cum intelligit aliquid valde intelligibile, non minus intelligit postea infima, sed magis: et idem accideret de sensu, si non haberet organum corporeum. Debilitatur tamen intellectus ex læsione alicujus organi corporalis indirecte inquantum ad ejus operationem requiritur operatio sensus habentis organum. Causa igitur diversitatis est quia sensitivum non est sine corpore sed intellectus est separatus. Ex his quæ dicuntur, apparet falsitas opinionis

When the intellect has grasped objects of the highest order it is not rendered powerless to understand others more proportioned to it. The higher and more synthetic the thought has been, the more apt the intellect becomes to penetrate inferior ones.

The activity of intellect and sense, therefore, depends on entirely different conditions. The statement of the reason for this difference will conclude the question. The reason given by Aristotle and St. Thomas is that the sense depends on an organ and the intellect does not. The experiments of Weber prove nothing else. What is the physiological explanation of Weber's law? Why does an excitation that has been

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eorum qui dixerunt, quod intellectus est vis imaginativa, vel aliqua præparatio in natura humana, consequens corporis complexionem. (St. Thomas, in Lib. III., De Anima, Lect. VII.)

sufficient in another case to make a perceptible difference not suffice now merely because the preceding excitation was more intense? The natural explanation is that nerve activity is subject to the law of assimilation and disassimilation which rules all living beings. The excitation causes a decomposition in the nervous substance. This brings it about that the organ cannot react with the same intensity on a second excitation. It must first be repaired by assimilation. During the time of reparation it is less capable of reacting, and this in proportion to the intensity, and hence to the wear and tear, of the first sensation.

The conditions of sensitive activity brought out by Weber after the observations of Aristotle and St. Thomas have their foundation, therefore, in the

fact that the sensitive faculties are bound to a nervous organ. If intellect were also organic it is evident that it would be subject to the same conditions. Since it is not, it follows that it is not sensitivo-nervous.

One might object that even intellectual activity cannot be prolonged without fatigue, and that hence it is subject to the same conditions as sense. Intellectual work does cause fatigue. The fact cannot be doubted. However, we need only examine under what conditions this fatigue is caused in order to see that intellectual work is not the direct cause. Let us suppose that the work is really intellectual work, such as the contemplation of abstract truth. Let us suppose that this work is performed by some nerve-centre, as is the case in the work of the imagination and

of the senses. Would not the fatigue grow in that case in proportion to the height of the intellectual vision? Would not the contemplation of a very great truth exhaust the intellect and leave it incapacitated for new acts for some time after?

Experience goes to show that this is not the case. The pleasure that diffuses itself throughout the soul, even at the time of intellectual labor, and which increases to amount to real enthusiasm in men of genius, shows that the upward flight of the soul in knowledge does not debilitate but strengthens it. Compare the labor of the novelist or poet in search of figures to put his thought in relief with the activity of the spirit contemplating truth. The play of the imagination tires them; as images succeed images, as they become

more numerous and more intense, fatigue increases until it paralyzes the imagination.

If intellectual and sensitivo-nervous activity were of the same nature they would follow the same law. If, on the contrary, fatigue of the brain is not caused directly by intellectual but by sensitive work, then the facts observed are explained. Thomistic philosophy recognizes that intellect requires the assistance of the imagination to abstract its own proper object from the image, and that it is aided by the image in all its subsequent acts. The imagination is bound to its cerebral organ and thus subject to the wear and reconstruction of all living tissues. In this way it is that intellectual work fatigues, and this in just that degree which corresponds to the exertion required to produce

the images necessary for intellectual work.

For this reason we are conscious of an effort in forming abstract ideas from concrete objects. In the beginning the effort in scientific or metaphysical studies is often painful, so that we cannot continue for any length of time without interruption. When once in possession of the proper images as a substratum to the contemplation of abstract truth, then intellectual work becomes easy; it invigorates the mind and fits it better for grasping other truths. Fatigue of the brain is thus explained by fatigue of the imagination, and cannot be explained on any other hypothesis. The conclusion of Aristotle and St. Thomas is vindicated by modern psychology. The difference in the conditions for acts of the intel-

lect and of the senses points to a difference in their nature.

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The researches of Experimental Psychology shake to their very foundations the claims of the English Associationistic school, and in this too it renders a great service to spiritualistic philosophy. English psychology had attempted a kind of anatomy of consciousness. It made all consist in passive sensations or impressions. These impressions came together, fused, dissociated under the guidance of certain laws, principally those of similarity and dissimilarity. The whole process was entirely *passive* without the intervention of any active subject. It was a psychology without a soul.

Now that things are being examined a little more closely, psychologists find

that there are a lot of conscious states that are without the slightest doubt active on the part of the subject. There are a number of mental states upon which the subject brings his *attention* to bear, and attention from *ad-tendere* means activity. Ordinarily we do not know the intensity of a sensation without *comparing* it with another preceding one. This work of comparison, or as the English call it, discrimination, is necessarily *activity*. The Associationists had confounded the fact of the coexistence with the perception of the similarity or dissimilarity. Supposing even that the coexistence of two mental states were entirely passive, it still remains true that the notion of their similarity or dissimilarity requires an *act of perception*. It is absolutely impossible to conceive psychical life with-

out an *active subject* which *perceives* itself as living, *notes* the impressions it receives, *compares* its acts, *associates* and *dissociates* them ; in a word, there can be no psychology without a perceiving subject which psychologists call spirit, or with the English "mind."

Dr. Pierre Janet, in a recent preface to the French translation of Dr. Hoeffding's "Outlines of Psychology," puts special stress on this leading idea of the Danish psychologist. He says : "Consciousness is essentially a striving towards unity, a synthetic force. . . . Activity is a fundamental property of conscious life, since we must always suppose a force which maintains the various elements and unifies them. This fundamental conception has played an important part in contemporaneous psychology, where it seems to have

firmly established itself. This is particularly true of pathological psychology."*

Moreover, mental acts manifest themselves to consciousness with characteristic properties, and these acts so distinguished are frequently repeated. At one time I have a headache; at another I enjoy pleasant company; again I pursue some difficult problem, and then I abandon myself to reminiscences. "There are here," says Ladd, "so many modes of activity of the same subject. What is there more natural than to call these modes of activity the 'capacities,' the 'faculties,' or 'powers' of the subject? Every-day language which embodies psychological truths

* *Esquisse d'une psychologie,* par le Dr. Hoeffding. Ed. française par Léon Poitevin. Preface par M. le Dr. Pierre Janet. Pp. 4, 5. Paris; Alcan; 1900.

shows us the necessity of judging in this manner." *

Is it not surprising to see the soul with its faculties, for which no amount of ridicule seemed too much, revived after a century of Associationism? Aristotle and the scholastics certainly understood that the name of a faculty did not take the place of an explanation, but they also knew that the present moment did not absorb all knowledge. Before I actually think, and after I have thought, there always remains a real *capability* to think. A stone does not only not think, but it has no *power* to think. It is true we know powers and faculties by the acts; we know the chemical properties of bodies from the chemical reactions which are

* Ladd, *Outlines of Descriptive Psychology*, p. 17. New York; Scribner; 1898.

observed; but these powers and properties belong to these things even before they act.

We are all acquainted with the quibble of Taine: * "Powers, faculties, or forces are nothing but possibilities." True, but what is the nature of these possibilities? Are they only logical potencies, i.e., non-impossibilities? If we affirm that a man has the *power or potency* of thinking, do we mean that we can conceive it as possible for a man to think in the same way in which we would speak of its being possible for a planet to be inhabited? Evidently not. The permanent potency in man to think implies in him the existence of causes capable to produce thought. By affirming a potency in man to think we

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* *De l'intelligence*, p. 346.

mean that there is in him a *reality* by virtue of which he may at any time think, if he should not think at the present moment. This reality, which is a *sufficient reason* not merely for an abstract possibility to think but for its real existence, is what we mean by *faculty* or *potency*.

Mental states not reducible one to another, subjected directly or indirectly to physical conditions, are produced in time, and realize in the organism effects which are subject to measurement. Mental states form a continuous stream of life of which the Ego knows itself as the subject and partially the cause. These are the general results of Experimental Psychology and the data of the fundamental problem of metaphysics.

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Experimental Psychology has by no

means done away with the problems of metaphysical psychology. They are just as clear and as imperative as ever. If we consult the best authorities amongst psychophysicists — Wundt, Ziehen, Ebbinghaus, Hoeffding, James, Ladd—there is not one of them but finds himself at the end of his work face to face with the eternal question, What is the nature of the conscious Ego ?

We have seen that it is impossible, and psychologists are almost a unit on it, *to identify* psychic life with functions of nerve-centres. There are those who would take refuge behind some theory of parallel development of psychic and physical activity. They call it *Parallelism.* After all, placing motion and thought in parallel series only reiterates the problem to be solved. To assume that at the bottom of the

phenomena is a substance, one, extended, thinking, after the idea of Spinoza, is merely to refer back to an unknown substratum the problem we are unable to solve.

The learned initiator of Experimental Psychology sees only one possible solution, the "animism of Aristotle." "The results of my labors," says Wundt, "do not square with the materialistic hypothesis, nor do they with the dualism of Plato or Des Cartes. It is only the animism of Aristotle which by joining psychology to biology that results as a plausible metaphysical conclusion from Experimental Psychology."*

Indeed if materialists be right and the soul be nothing but a dynamo of a

* Grundzuege, *Der phys. Psychologie,* II., 4te Auflage, Cap. 23, S. 633.

physiological mechanism, as they would have us believe, then Experimental Psychology is not a distinct science, but a chapter of mechanics or physiology. If, on the other hand, the soul be such that its essence is to think, that it exists for its own sake independently of the body, observable directly and exclusively by consciousness, then we can conceive of no psychological laboratory. Such laboratory would mean that we were going to experiment directly on the soul by subjecting it to apparatus of measurement, weight, force, etc.; in other words, that the soul was material.*

If, on the contrary, we hold with Aristotle and the mediæval philosophers that man is one substance composed of

* A. Thiéry, *Revue Néo-Scholastique*, avril, 1895, p. 182.

matter and an immaterial soul, that there is a relation of dependence between the higher and the lower functions, that there is in man not a single higher operation without its physical correlative, not an idea without an image, not a volition without a sensible emotion, then the concrete phenomenon offers to consciousness the character of a complexus at the same time psychological and physiological. In that theory, and in that alone, the existence of a science of psychophysiology is entirely justified.*

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*Mercier, *Les Origines de la psychologie contemporaine,* pp. 455–57.

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